



Achievement Indicators

BIOLOGY GRADE 9					
ACHIEVEMENTS			Achievement Indicators		
			Term 1	Term 2	Term 3
CRITERION A	Knowing And Understanding	Explain scientific knowledge	<p>Identifies and describes morphological characteristics relevant to classification processes.</p> <p>Explains the processes of evolution and natural selection.</p> <p>Describes the features and differences between cells of different types</p> <p>Identifies the different structural features by which cells can be classified</p>	<p>Identifies and describes morphological characteristics of plants and animals related to transport systems.</p> <p>Explains the role of vascular tissue in maintaining functions in living systems</p> <p>Explains the molecular interactions behind adhesion, cohesion and capillary transport.</p> <p>Accurately describes the transpiration stream.</p>	<p>Identifies and describes anatomical and physiological structures and processes related to human digestion.</p> <p>Explains the processes chemical and mechanical digestion in humans.</p> <p>Discusses the current trends and information related to the topic of healthy dietary choices.</p>
		Apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations	<p>Classifies organisms based on morphological/physiological characteristics</p> <p>Uses classification tools (e.g. dichotomous key) to correctly identify different groups of organisms</p> <p>Interprets cladograms to identify evolutionary relationships between different groups of organisms</p>	<p>Applies knowledge of osmosis and diffusion to correctly predict the osmotic interactions of a simulated cell.</p>	<p>Identifies components present within unknown food samples using appropriate methods and indicators.</p> <p>Applies relevant formula to determine BMI.</p>

		<p><i>Analyse information to make scientifically supported judgments</i></p>	<p>Differentiates between homologous and analogous traits in selected animal species.</p> <p>Compares and contrasts the evidence supporting different theories relating to evolution and provides a reasoned judgment based on their work.</p> <p>Compares and contrasts the evidence supporting different theories relating to biogenesis and provides a reasoned judgment based on their work.</p>	<p>Compares and contrasts the evidence relating to the utility of phytoremediation and provides a reasoned judgment based on the findings of current research.</p>	<p>Analyses information to make scientifically supported judgments on enzyme function in digestion.</p>
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CRITERON B	Inquiring And Designing	<i>Explain a problem or question to be tested by a scientific investigation</i>	Explains a problem or question to be tested by a scientific investigation on the effect of a selected factor on heat loss in simulated penguins.	Explains a problem or question to be tested by a scientific investigation on how a factor affects transpiration in plants.	Explains a problem or question to be tested by a scientific investigation on how a factor affects enzyme function.
		<i>Formulate a testable hypothesis and explain it using scientific reasoning</i>	Formulates and explains a testable hypothesis using correct scientific reasoning on the effect of a selected factor on heat loss in simulated penguins.	Formulates and explains a testable hypothesis using correct scientific reasoning on the effect of an environmental factor on transpiration in plants.	Formulates and explains a testable hypothesis using correct scientific reasoning on how a factor affects enzymes.
		<i>Explain how to manipulate the variables and explain how data will be collected</i>	Explains how to manipulate the independent and controlled variables within the scientific investigation. Explains how sufficient, relevant data will be collected to explain the effect of a selected factor on heat loss in simulated penguins.	Explains how to manipulate the independent and controlled variables within a scientific investigation of how an environmental factor affects transpiration in plants. Explains how sufficient, relevant data will be collected to explain the effect of a selected environmental factor affects transpiration in plants.	Explains how to manipulate the independent and controlled variables within the scientific investigation of a specified factor on enzyme function. Explains how sufficient, relevant data will be collected to explain the effect of a specific factor on enzyme function.
		<i>Design scientific investigations</i>	Designs a logical, complete and safe method in which he or she selects appropriate materials and equipment to determine the effect of a selected factor on heat loss in simulated penguins.	Designs a logical, complete and safe method in which he or she selects appropriate materials and equipment to investigate the effect of an environmental factor on transpiration in plants.	Designs a logical, complete and safe method in which he or she selects appropriate materials and equipment to show how a factor affects enzyme function.

CRITERION C	Processing And Evaluating	<i>Present collected and transform data</i>	<p>Correctly collects and organizes data in numerical and visual forms to determine the effect of a selected factor on heat loss in simulated penguins.</p> <p>Correctly transforms and presents data in numerical and visual forms to determine the effect of a selected factor on heat loss in a simulated penguin group.</p>	<p>Correctly collects and organizes data in numerical and visual forms to determine how a factor affects transpiration in plants.</p> <p>Correctly transforms and presents data in numerical and visual forms to determine how a factor affects transpiration in plants.</p>	<p>Correctly collects and organizes data in numerical and visual forms to determine how a factor affects enzyme function.</p> <p>Correctly transforms and presents data in numerical and visual forms to determine how a factor affects enzyme function.</p>
		<i>Interpret data and explain results using scientific reasoning</i>	<p>Accurately interprets data and describes results using correct scientific reasoning on the effect of a selected factor on heat loss in a simulated penguin group.</p>	<p>Accurately interprets data and describes results using correct scientific reasoning on how a factor affects transpiration in plants.</p>	<p>Accurately interprets data and describes results using correct scientific reasoning on how a factor affects enzyme function.</p>
		<i>Evaluate the validity of a hypothesis based on the outcome of the scientific investigation</i>	<p>Evaluates the validity of a hypothesis based on the outcome of a scientific investigation on the effect of a selected factor on heat loss in simulated a penguin group.</p>	<p>✓ Evaluates the validity of a hypothesis based on the outcome of a scientific investigation on how a factor affects transpiration in plants.</p>	<p>✓ Evaluates the validity of a hypothesis based on the outcome of a scientific investigation on how a factor affects enzyme function.</p>
		<i>Evaluate the validity of the method</i>	<p>Evaluates the validity of a method based on the outcome of a scientific investigation on the effect of a selected factor on heat loss in simulated penguins.</p>	<p>Evaluates the validity of a method based on the outcome of a scientific investigation on how a factor affects transpiration in plants.</p>	<p>Evaluate the validity of a method based on the outcome of a scientific investigation on how a factor affects enzyme function.</p>
		<i>Explain improvements or extensions to the method</i>	<p>Explains improvements to address the weaknesses identified in the method.</p>	<p>Explains suitable improvements to address the weaknesses identified in the method.</p> <p>Suggests a logical extension to the investigation that would serve to further understanding.</p>	<p>Explains suitable improvements to address the weaknesses identified in the method.</p> <p>Proposes a logical extension to the investigation that would serve to further understanding.</p>

CRITERION D	Reflecting On The Impacts Of Science	<i>Explain the ways in which science is applied and used to address a specific problem or issue</i>	Evaluates the evidence supporting different theories of 'biogenesis'.	Provides an explanation of the use of phytoremediation as a means to ameliorate environmental damage.	Explains how science can improve access to nutrition in the world.
		<i>Discuss and analyse the various implications of using science and its application to solving a specific problem or issue</i>	Describes the implications (positive and negative) of the biogenesis theories with respect to the future of society.	Compares the effects of phytoremediation against other methods of environmental decontamination.	Discusses how external factors can affect the level of adequate nutrition obtainable.
		<i>Apply scientific language effectively</i>	Applies relevant scientific language in their explanations of natural selection / evolution and biogenesis. Applies relevant scientific language in their explanation of the various theories relating to the beginning of life on Earth.	Applies relevant scientific language in their explanation of transport in living systems.	Applies relevant scientific language in their explanation of the process of nutrition within the body.
		<i>Document the work of others and sources of information used.</i>	Correctly cites using the APA style and include a fully referenced bibliography.	Correctly cites using the APA style and includes a fully referenced bibliography.	Correctly cites using the APA style and includes a fully referenced bibliography.